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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/778,300	02/07/2001	Marc Adam Kaplan	Y0R9-2000-084US1 (872-472	5641

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EXAMINER
RYMAN, DANIEL J

ART UNIT	PAPER NUMBER
2665	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/778,300	KAPLAN, MARC ADAM	
	Examiner	Art Unit	
	Daniel J. Ryman	2665	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *07 February 2001*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-22* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-22* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *02 April 2001* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Information Disclosure Statement

1. The listing of references in the specification is not a proper information disclosure statement. 37 CFR 1.98(b) requires a list of all patents, publications, or other information submitted for consideration by the Office, and MPEP § 609 A(1) states, "the list may not be incorporated into the specification but must be submitted in a separate paper." Therefore, unless the references have been cited by the examiner on form PTO-892, they have not been considered. The reference cited on page 6, lines 13-15 should be included in an IDS.

Drawings

2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: ref. 116 and 118 (see page 16, lines 3-6 and page 16, lines 11-12); ref. 202 and 204 (see page 13, lines 3-8); and ref. 206 and 208 (see page 16, lines 11-20). Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

3. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference characters "104" and "114" have both been used to designate clients. Corrected

drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

4. The disclosure is objected to because of the following informalities: on page 15, lines 3-5, ref. 614 has been used to designate a cell F; however, ref. 614 in Fig. 6 designates a cell other than cell F. On page 19, line 21, either "Q" should be "C:E:Q" or "C:G:N" should be "N." On page 24, line 18, "(use . . . to)" should be "use . . . to". On page31, line 3, the "VM Numbers" of "C:B" should be "0,6" rather than only "6".

Appropriate correction is required.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 1, 13, and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Doeringer et al. (USPN 5,361,256) in view of Cheng (USPN 6,600,724).

7. Regarding claims 1 and 14, Doeringer discloses a method, which can be implemented in software, for the multicast distribution of a message from a first real machine (application in subnetwork W) (col. 2, lines 39-45) through a network of message processing machines (nodes) to one or more message receiving machines (multicast destinations) (col. 2, lines 39-45), wherein the network is organized into two or more cells (subnetworks) including machines (col. 2, lines 39-45), the method comprising the steps of: selecting a spanning tree rooted in the cell containing the first real machine, and comprised of the cells (col. 9, lines 23-27 and col. 10, line 20-col. 11, line 3); determining one or more cells for receiving the message based on the selected spanning tree and the location of the receiving machines (col. 9, lines 23-27 and col. 10, line 20-col. 11, line 3); routing the message to the receiving cells in the spanning tree (col. 9, lines 23-27 and col. 10, line 20-col. 11, line 3); and delivering the message to each receiving machine within the receiving cells (col. 9, lines 23-27 and col. 10, line 20-col. 11, line 3).

Doeringer does not expressly disclose that the selected spanning tree comprises link bundles or selecting one or more routes from among the machines and links within the cells and link bundles to a next cell. Cheng teaches, in a routing system, selecting a spanning tree (SPT) (col. 5, lines 52-64) rooted in the node (col. 9, lines 39-42) comprising link bundles (col. 6, lines 65-66 and col. 7, lines 5-7) and selecting one or more routes from among the machines and links to a next destination (col. 10, lines 17-29 and col. 12, lines 40-48). Cheng's system makes it possible to share load and guard against link failures (col. 10, lines 17-29 and col. 12, lines 40-48). Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to select a spanning tree comprising link bundles and to select one or more routes from

among the machines and links within the cells and link bundles to a next cell in order to enable the system to share load and to guard against link failures.

8. Regarding claim 13, referring to claim 1, Doeringer in view of Cheng discloses the step of scaling the message handling capacity of the network (Cheng: col. 8, lines 15-24).

9. Claims 2-12 and 15-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Doeringer et al. (USPN 5,361,256) in view of Cheng (USPN 6,600,724) as applied to claim 1 above, and further in view of Coile et al. (USPN 6,061,349).

10. Regarding claim 2, referring to claim 1, Doeringer in view of Cheng does not expressly disclose implementing one or more virtual machines within a real machine. Coile teaches, in a data distribution network, implementing one or more virtual machines within a real machine in order to efficiently utilize the resources of the physical machine (col. 1, lines 44-49 and col. 2, lines 24-43). Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to implement one or more virtual machines within a real machine in order to efficiently utilize the resources of the physical machine.

11. Regarding claim 3, referring to claim 1, Doeringer in view of Cheng does not expressly disclose that a link is one of a virtual link between two virtual machines, and a real link between two real machines. Coile teaches, in a data distribution network, that a link can be one of a virtual link between two virtual machines, and a real link between two real machines in order to differentiate between links between physical nodes and links between logical nodes (col. 1, lines 44-49; col. 2, lines 24-43; and col. 6, lines 22-42). Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to have a link comprise one of a virtual link

between two virtual machines and a real link between two real machines in order to differentiate between links between physical nodes and links between logical nodes.

12. Regarding claim 4, referring to claim 1, Doeringer in view of Cheng discloses that the multicast distribution of the message is along links (Doeringer: col. 9, lines 23-27 and col. 10, line 20-col. 11, line 3) and further comprises the step of routing the message through the selected spanning tree according to precomputed distribution tables associated with the each machine (Cheng: col. 5, lines 52-64). Doeringer in view of Cheng does not expressly disclose routing the message according to precomputed cellule distribution tables associated with the each real machine, wherein a cellule comprises one or more virtual machines within a cell at an end of a link bundle. Coile teaches, in a data distribution network, implementing one or more virtual machines within a real machine in order to efficiently utilize the resources of the physical machine (col. 1, lines 44-49 and col. 2, lines 24-43). Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to route the message according to precomputed cellule distribution tables associated with the each real machine, wherein a cellule comprises one or more virtual machines within a cell at an end of a link bundle in order to efficiently utilize the resources of the physical machine.

13. Regarding claim 5, referring to claim 4, Doeringer in view of Cheng in further view of Coile discloses that the step routing further comprises the step of determining a routing choice table for each real machine (Cheng: col. 6, lines 13-30 and col. 6, lines 40-60).

14. Regarding claim 6, referring to claim 4, Doeringer in view of Cheng in further view of Coile discloses that the multicast distribution is according to the cellule distribution table and a

message distribution tag including a flagged list of virtual machines (Doeringer: col. 10, line 20-col. 11, line 3).

15. Regarding claim 7, referring to claim 5, Doeringer in view of Cheng in further view of Coile discloses that the routing choice table selects machines and links according to one of random choice, round-robin least busy, least-busy, preserve message order, and preserve message order by hashing on origin identification (Cheng: col. 10, lines 17-29 and col. 12, lines 40-48).

16. Regarding claim 8, referring to claim 5, Doeringer in view of Cheng in further view of Coile discloses that the step of determining a routing choice table further includes the step of determining a failover route for redirecting a message (Cheng: col. 10, lines 17-29 and col. 12, lines 40-48).

17. Regarding claim 9, referring to claim 5, Doeringer in view of Cheng in further view of Coile discloses that the step of determining a routing choice table further includes the step of exchanging routing information included in the routing choice table of each machine upon the happening of an event (Cheng: col. 6, lines 13-30 and col. 6, lines 41-60).

18. Regarding claim 10, referring to claim 9, Doeringer in view of Cheng in further view of Coile discloses that an event includes one of a machine failure and a machine recovery (Cheng: col. 6, lines 53-60).

19. Regarding claim 11, referring to claim 6, Doeringer in view of Cheng in further view of Coile does not expressly disclose that the message distribution tags can be one of compressed, factored between internal and external machines relevant to a sending machine, and compressed and factored; however, Doeringer in view of Cheng in further view of Coile does disclose the use

of message distribution tags (Doeringer: col. 10, line 20-col. 11, line 3). Examiner takes official notice that it is well known in the art to compress packet information, including header information, in order to efficiently utilize bandwidth. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to compress the message distribution tags in order to efficiently utilize bandwidth.

20. Regarding claim 12, referring to claim 11, Doeringer in view of Cheng in further view of Coile implicitly discloses determining an updated message distribution tag for the message relevant to the internal and external machines of the sending machine, wherein the sending machine can be one of the first real machine and a receiving machine for forwarding the message to one or more additional receiving machines (Doeringer: col. 10, line 20-col. 11, line 3 and Coile: col. 1, lines 44-49 and col. 2, lines 24-43).

21. Regarding claim 15, Doeringer discloses a method for the multicast distribution of a message from a first real machine (application in subnetwork W) (col. 2, lines 39-45) through a network of message processing machines (nodes) to one or more message receiving machines (multicast destinations) (col. 2, lines 39-45), wherein the network is organized into two or more cells (subnetworks) including machines (col. 2, lines 39-45), the method comprising the steps of: selecting a spanning tree rooted in the cell containing the first real machine, and comprised of the cells (col. 9, lines 23-27 and col. 10, line 20-col. 11, line 3); determining one or more cells for receiving the message based on the selected spanning tree and the location of the receiving machines (col. 9, lines 23-27 and col. 10, line 20-col. 11, line 3); routing the message to the receiving cells in the spanning tree (col. 9, lines 23-27 and col. 10, line 20-col. 11, line 3); and

delivering the message to each receiving machine within the receiving cells (col. 9, lines 23-27 and col. 10, line 20-col. 11, line 3).

Doeringer does not expressly disclose that the selected spanning tree comprises link bundles or selecting one or more routes from among the machines and links within the cells and link bundles to a next cell. Cheng teaches, in a routing system, selecting a spanning tree (SPT) (col. 5, lines 52-64) rooted in the node (col. 9, lines 39-42) comprising link bundles (col. 6, lines 65-66 and col. 7, lines 5-7) and selecting one or more routes from among the machines and links to a next destination (col. 10, lines 17-29 and col. 12, lines 40-48). Cheng's system makes it possible to share load and guard against link failures (col. 10, lines 17-29 and col. 12, lines 40-48). Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to select a spanning tree comprising link bundles and to select one or more routes from among the machines and links within the cells and link bundles to a next cell in order to enable the system to share load and to guard against link failures.

Doeringer in view of Cheng does not expressly disclose having a link comprise one of a virtual link between two virtual machines, and a real link between two real machines. Coile teaches, in a data distribution network, that a link can be one of a virtual link between two virtual machines, and a real link between two real machines in order to differentiate between links between physical nodes and links between logical nodes (col. 1, lines 44-49; col. 2, lines 24-43; and col. 6, lines 22-42). Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to have a link comprise one of a virtual link between two virtual machines and a real link between two real machines in order to differentiate between links between physical nodes and links between logical nodes.

Doeringer in view of Cheng also does not expressly disclose implementing one or more virtual machines within a real machine. Coile teaches, in a data distribution network, implementing one or more virtual machines within a real machine in order to efficiently utilize the resources of the physical machine (col. 1, lines 44-49 and col. 2, lines 24-43). Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to implement one or more virtual machines within a real machine in order to efficiently utilize the resources of the physical machine.

Further, Doeringer in view of Cheng does not expressly disclose routing the message through the selected spanning tree according to precomputed cellule distribution tables associated with the each real machine, wherein a cellule comprises one or more virtual machines within a cell at an end of a link bundle. Coile teaches, in a data distribution network, implementing one or more virtual machines within a real machine in order to efficiently utilize the resources of the physical machine (col. 1, lines 44-49 and col. 2, lines 24-43). Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to route the message according to precomputed cellule distribution tables associated with the each real machine, wherein a cellule comprises one or more virtual machines within a cell at an end of a link bundle in order to efficiently utilize the resources of the physical machine.

Doeringer in view of Cheng in further view of Coile suggests that the routing choice table corresponds to each real machine (Cheng: col. 6, lines 13-30 and col. 6, lines 40-60); and that a message distribution tag includes a flagged list of virtual machines (Doeringer: col. 10, line 20-col. 11, line 3).

22. Regarding claim 16, referring to claim 15, Doeringer in view of Cheng in further view of Coile discloses that the routing choice table selects machines and links according to one of random choice, round-robin least busy, least-busy, preserve message order, and preserve message order by hashing on origin identification (Cheng: col. 10, lines 17-29 and col. 12, lines 40-48).

23. Regarding claim 17, referring to claim 15, Doeringer in view of Cheng in further view of Coile discloses that the step of determining a routing choice table further includes the step of determining a failover route for redirecting a message (Cheng: col. 10, lines 17-29 and col. 12, lines 40-48).

24. Regarding claim 18, referring to claim 15, Doeringer in view of Cheng in further view of Coile discloses that the step of determining a routing choice table further includes the step of exchanging routing information included in the routing choice table of each machine upon the happening of an event (Cheng: col. 6, lines 13-30 and col. 6, lines 41-60).

25. Regarding claim 19, referring to claim 18, Doeringer in view of Cheng in further view of Coile discloses that an event includes one of a machine failure and a machine recovery (Cheng: col. 6, lines 53-60).

26. Regarding claim 20, referring to claim 15, Doeringer in view of Cheng in further view of Coile does not expressly disclose that the message distribution tags can be one of compressed, factored between internal and external machines relevant to a sending machine, and compressed and factored; however, Doeringer in view of Cheng in further view of Coile does disclose the use of message distribution tags (Doeringer: col. 10, line 20-col. 11, line 3). Examiner takes official notice that it is well known in the art to compress packet information, including header

information, in order to efficiently utilize bandwidth. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to compress the message distribution tags in order to efficiently utilize bandwidth.

27. Regarding claim 21, referring to claim 20, Doeringer in view of Cheng in further view of Coile implicitly discloses determining an updated message distribution tag for the message relevant to the internal and external machines of the sending machine, wherein the sending machine can be one of the first real machine and a receiving machine for forwarding the message to one or more additional receiving machines (Doeringer: col. 10, line 20-col. 11, line 3 and Coile: col. 1, lines 44-49 and col. 2, lines 24-43).

28. Regarding claim 22, referring to claim 15, Doeringer in view of Cheng in further view of Coile discloses the step of scaling the message handling capacity of the network (Cheng: col. 8, lines 15-24).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daniel J. Ryman whose telephone number is (571)272-3152. The examiner can normally be reached on Mon.-Fri. 7:00-4:30 with every other Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Huy Vu can be reached on (571)272-3155. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

DJR

Daniel J. Ryman
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